

REMARKS/ARGUMENTS

Information Disclosure Statement

The information disclosure statement filed February 3, 2004, failed to comply with 34 CFR 1.98(a)(2), because Applicants did not include a legible copy of each cited foreign patent listed in its information disclosure statement. Attached to this response is a copy of Form 1449 listing the references along with copies of the references.

Claim Rejections

Claims 1-30 are pending in the application. Reconsideration in view the following remarks is respectfully requested.

Claims 1-3, 7, 9-11, 15, 17-19, 23 and 25-27 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Sager, US Patent 6,542,921 ("Sager"). Applicants gratefully acknowledge the Office Action's indication that claims 4-6, 8, 12-14, 16, 20-22 and 28-30 contain allowable subject matter and would be allowable if rewritten in independent form including all appropriate limitations. Claim 7, 15 and 23 are amended to overcome objections to minor informalities. Claims 1, 17 and 25 are amended to clarify the invention as described and claims 4, 20 and 28 are amended to preserve proper claim dependency.

Applicants respectfully submit nowhere in Sager is the disclosure, teaching or suggestion of "[i]n a multi-threaded processor for at least first and second threads, a method of assigning thread priority comprising: ... determining if there is an indication of approaching instruction side starvation for said first thread; and incrementing a value stored in said first starting counter in response to an indication of approaching instruction

side starvation for said first thread” (e.g., the embodiment as claimed in amended claim 1).

The Office Action asserts Sager has taught determining if there is an indication of approaching instruction side starvation for said first thread (Abstract, Figure 11, element 1117). The Abstract states:

The present invention provides a method and apparatus for controlling a processing priority assigned alternately to a first thread and a second thread in a multithreaded processor to prevent deadlock and livelock problems between the first thread and the second thread. In one embodiment, the processing priority is initially assigned to the first thread for a first duration. It is then determined whether the first duration has expired in a given processing cycle. If the first duration has expired, the processing priority is assigned to the second thread for a second duration.

The description of Element 1117 states:

At decision block 1117, the process proceeds to block 1121 if it is determined that the processing priority has been switched from thread 0 to thread 1 in the current processing cycle and loops back to block 1105 otherwise. In one embodiment, whether the processing priority has been switched back from thread 0 to thread 1 in the current processing cycle can be determined by detecting a signal indicating that the content of the TPC has reached the predetermined threshold value in the current processing cycle and that the TPB has been inverted from 0 to 1 in the current processing cycle. The determination of whether the processing priority has been switched from thread 0 to thread 1 in the current processing cycle will be described in more detail below.

Applicants submit that the cited section does not disclose Iside starvation as disclosed in embodiments of the Applicants’ invention. Further support for the indication of a approaching instruction side starvation can be found on page 9 line 3 of the specification which states:

“Iside starvation is when a thread cannot fetch instructions because the other thread(s) has/have effectively blocked it from doing so. As used herein, and indication of approaching Iside starvation is an indication that such a situation may be approaching for a thread. An indication of approaching Iside starvation can be anticipated through the monitoring of one or more conditions. In one embodiment, the conditions may include one or more of the following:...”

Applicants respectfully submit that the cited sections of Sager do not indicate a conditional approach to and *indication of approaching* instruction side starvation as described in the embodiment of claim 1, but rather seem to disclose thread switching based on priority. Applicants respectfully submit the cited reference does not disclose “...*determining if there is an indication of approaching instruction side starvation* for said first thread...” (see above) as recited in the embodiment of claim 1, and is therefore inadequate to support a proper 35 U.S.C. § 102(e) rejection. Independent claims 17 and 25 contain similar allowable limitations. Dependent claims 2-6, 18-22 and 26-30 are allowable for depending from allowable base claims.

Furthermore, Applicants’ respectfully submit that nowhere is the disclosure, teaching or suggestion of “... a multi-threaded processor to handle processing of at least first and second threads, a method of assigning thread priority comprising: ... and assigning priority to said second thread in response to one of a plurality of conditions being true, the conditions consisting if a thread precedence counter expires; if processing of said first thread retires an instruction from said first thread; and if there is not an indication of approaching instruction side starvation for said first thread.” (e.g., the embodiment as claimed in amended claim 7).

The Office Action asserts that Sager has taught the claimed limitations at Figure 9 (elements 913 and 917) – “...when the priority of the second thread is assigned in response to only the current priority period expiring, element 913, the condition is true that there is not an indication of approaching instruction side starvation for said thread.” The Office Action further states that when the priority of the second thread is assigned in

response to only the current priority period expiring, this means that the condition is true that there is not an indication of approaching instruction side starvation for said thread.

First, Applicants first reiterate all arguments made above regarding Iside starvation. Moreover, Applicants' respectfully submit that Office Action's assumptions regarding Sager's disclosure of assigning priority based on a plurality of conditions including indication of approaching Iside starvation are both unsupported and not taught suggested or disclosed in the Sager reference. The description of elements 913 and 917 of Sager merely state:

At decision loop 913, the method 900 proceeds to block 917 if the current priority duration has expired. At block 917, the processing priority is alternated, i.e., assigned to the other thread.

It is clear Sager does not disclose assigning priority based on a plurality of conditions including indication of approaching Iside starvation as described in the embodiment of claim 7 in its description of elements 913 and 917. The Office Action's assumptions are insufficient and must be found in the reference to form the basis of a proper 35 U.S.C. 102(e) rejection. Independent claims 15 and 23 contain substantively similar claim elements, and therefore are allowable as well. Dependent claims 8, 16 and 24 depend from allowable base claims and therefore should be allowed as well.

For at least all the above reasons, the Applicants respectfully submit that this application is in condition for allowance. A Notice of Allowance is earnestly solicited.

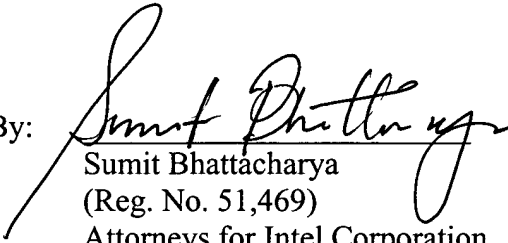
Serial No. 09/888,273
Response dated June 29, 2005
Office Action dated February 7, 2005

The Examiner is invited to contact the undersigned at (408) 975-7500 to discuss any matter concerning this application. The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. **11-0600**.

Respectfully submitted,
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